

CLAIMS

1. A process for preparing a peracid or diacylperoxide, characterized in that a
mixed anhydride of formula $R^1[C(O)OC(O)OR^2]_n$ or $[R^3C(O)OC(O)O]_pR^4$ is
5 contacted with a hydroperoxide of formula $R^5[OOH]_m$ in the presence of a
base, wherein
 R^1 represents a mono-, di-, tri- or tetrasubstituted C_1 - C_{19} hydrocarbon group,
optionally containing one or more hetero atoms,
 n is 1-4,
10 R^2 represents a C_1 - C_{20} hydrocarbon group, optionally containing one or
more hetero atoms,
 R^3 represents a C_1 - C_{19} hydrocarbon group, optionally containing one or
more hetero atoms,
 R^4 represents a di-, tri- or tetrasubstituted C_1 - C_{20} hydrocarbon group,
15 optionally containing one or more hetero atoms,
 p is 2-4,
 R^5 represents hydrogen or a mono- or disubstituted C_3 - C_{18} tertiary alkyl or
 C_2 - C_{20} acyl group, in which the tertiary alkyl or acyl group may optionally
contain one or more hetero atoms,
20 m is 1 or 2, and
if R^5 represents hydrogen, m is 1,
provided that if the hydroperoxide is an α,α' -dihydroperoxyperoxide, the
reaction is not carried out in an inert two-phase solvent system comprising a
polar solvent and an apolar solvent.
25
2. A process according to claim 1, characterized in that n is 1 or 2.
3. A process according to claim 1, characterized in that R^1 and R^3 ,
independently represents a linear or branched C_4 - C_{12} alkyl or C_6 - C_{12} aryl
30 group, said alkyl and aryl groups optionally being substituted with a hydroxy
group, a linear or branched C_1 - C_4 alkyl group or a halogen atom.

4. A process according to claim 1, characterized in that R^2 represents a C_3 - C_8 alkyl group or a C_6 - C_{12} aryl group.
5. A process according to claim 1, characterized in that a mixed anhydride of formula $R^1[C(O)OC(O)OR^2]_n$ is used.
6. A process according to claim 1, characterized in that R^5 represents hydrogen or a monovalent C_3 - C_{18} tertiary alkyl group.
7. A process according to claim 1, characterized in that the base is an alkali metal hydroxide.
8. A process according to claim 1, characterized in that the reaction is carried out at a pH of 5 or higher.
9. A process according to claim 1, characterized in that the reaction is carried out in the absence of an organic solvent.
10. A process according to claim 1, characterized in that the mixed anhydride is prepared by contacting a carboxylic acid of formula $R^1[C(O)OH]_n$ with a halogen formate of formula $XC(O)OR^2$ or $[XC(O)O]_pR^4$ in the presence of a base in an aqueous medium, wherein R^1 , R^2 , R^4 , n , and p have the same meaning as defined in claim 1 and X is a halogen atom.
11. A process according to claim 10, characterized in that a quaternary ammonium phase transfer or tertiary amine catalyst is present.
12. A hydroxydiacylperoxide obtainable by the process according to claim 1 wherein R^1 or R^3 represents a C_1 - C_{19} hydrocarbon group, optionally containing one or more hetero atoms, substituted with a hydroxy group, n ,

5 R^2 , R^4 , and p have the meaning defined above, R^5 represents hydrogen or a mono- or divalent C_2 - C_{20} acyl group, said acyl group optionally containing one or more hetero atoms, said acyl group optionally substituted with a hydroxy group, and m is 1 or 2, with the exception of benzoyl hydroxyacetyl peroxide, with the proviso that said hydroxydiacylperoxide does not contain a hydroxyphenyl moiety .

10 13. Use of a hydroxyperoxide according to Claim 1 in bleaching, oxidation, epoxidation, chain transfer, radical (co)polymerization, or (co)polymer modification reactions.

14. Use of a hydroperoxide according to Claim 1 in the preparation of poly(meth)acrylates.

15 15. A hydroxyperacid obtainable by the process according to claim 12 wherein R^1 or R^3 represents a C_1 - C_{19} hydrocarbon group, optionally containing one or more hetero atoms, substituted with a hydroxy group, n , R^2 , R^4 , and p have the meaning defined above, R^5 represents hydrogen, and m is 1.

20 16. Use of a hydroxyperoxide according to Claim 13 in bleaching, oxidation, epoxidation, chain transfer, radical (co)polymerization, or (co)polymer modification reactions.